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17 UNITED STATES DISTRICT COURT

18 NORTHERN DISTRICT OF CALIFORNIA, SAN FRANCISCO DIVISION

19 WAYMO LLC,

20 CASE NO. 3:17-cv-00939-WHA

21 Plaintiff,

22 vs.
23 **PLAINTIFF WAYMO LLC'S
24 OPPOSITION TO DEFENDANTS' UBER
25 TECHNOLOGIES, INC. AND
26 OTTOMOTTO LLC'S MOTION IN
27 LIMINE NO. 27 TO EXCLUDE PROF.
28 HESSELINK'S SAVED DEVELOPMENT
TIME OPINIONS**

29 UBER TECHNOLOGIES, INC.;
30 OTTOMOTTO LLC,

31 Defendants.

32 Judge: The Honorable William Alsup
33 Trial Date: December 4, 2017

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35 **REDACTED VERSION OF DOCUMENT
36 SOUGHT TO BE FILED UNDER SEAL**

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1 Waymo responds to Defendants' motion to exclude Prof. Hesselink's saved development
 2 time opinions (Dkt. 2198-3). This is Defendants' fifth motion to exclude portions of Prof.
 3 Hesselink's opinions, and it is untimely under the parties' agreement to bring *Daubert* motions by
 4 September 16. Prof. Hesselink had already offered his saved development time opinions then, but
 5 Defendants elected not to bring a motion to exclude them. Dkts. 1611; 1614. Now, months later,
 6 Defendants latch on to one line in the Court's *Daubert* order regarding Mr. Wagner to try to
 7 exclude yet another aspect of Prof. Hesselink's opinions. In doing so, Defendants mischaracterize
 8 Prof. Hesselink's expertise, his actual opinions, and Waymo's contentions. Defendants also
 9 ignore their own expert's qualifications and opinions. The parties' competing expert opinions on
 10 saved development time should be resolved by the jury, not the Court on the eve of trial.

11 **I. DEFENDANTS' MOTION IS UNTIMELY**

12 After lengthy negotiations, the parties agreed that they would file *Daubert* motions on
 13 September 16. Dkt. 2015-7. Waymo kept to its word. Dkt. 1607. Defendants appeared to keep to
 14 the agreement too, filing a number of *Daubert* motions the same day. Dkts. 1611; 1614. Months
 15 later and only three weeks before trial, however, Defendants seek to bring other *Daubert* challenges
 16 based entirely on opinions offered well before the parties' agreed deadline. Defendants' latest
 17 *Daubert* motion should be denied as untimely. *See* Dkt. 2218 (denying precis requesting motion to
 18 exclude opinions regarding Trade Secret 25).

19 **II. DEFENDANTS' ATTEMPT TO DISQUALIFY PROF. HESSELINK BASED ON**
 20 **HIS QUALIFICATIONS IS BASELESS**

21 Defendants claim that Prof. Hesselink is not qualified to offer opinions regarding Uber's AV
 22 timeline being accelerated by using Waymo's trade secrets because he has never developed a self-
 23 driving car. But having developed a self-driving car is not the standard to provide technical opinions
 24 on the subject matter of the asserted trade secrets. *See, e.g., Asetek Danmark A/S v. CMI USA, Inc.*,
 25 No. 13-cv-00457-JST, 2014 U.S. Dist. LEXIS 155452, at *5-7 (N.D. Cal. Nov. 2, 2014) (permitting
 26 expert with experience in thermodynamics to testify regarding computer liquid cooling even though
 27 he had never specifically worked on liquid cooling for computer platforms); *Todd v. Tempur-Sealy*
 28 *Int'l, Inc.*, No. 13-cv-049848-JST, 2016 U.S. Dist. LEXIS 134927, at *17 (N.D. Cal. Sept. 28, 2016)

1 (denying motion to exclude witness on ground that her experience involving toxic chemicals was
 2 with pesticides, not the household products at issue, because her qualifications were in the same or
 3 directly-related field).

4 Under the relevant standard, Prof. Hesselink is well-qualified to offer his opinions. He has
 5 two bachelors degrees in applied physics and applied mechanics, a masters from Caltech in Applied
 6 Mechanics and Physics, and a Ph.D. from Caltech in Applied Mechanics and Physics/Applied
 7 Physics. He has almost 30 years of expertise in the technology of optical and hybrid optical/software
 8 systems, including an intimate knowledge of LiDAR and work in the development of lasers for
 9 distance measurements. In addition, he gained personal experience developing technology with
 10 patented and trade secret features by serving as Chief Technology Officer of Senvid, a company that
 11 designed secure peer-to-peer secure technology and that was ultimately purchased by Western
 12 Digital. He also served as CTO Branded Products at Western Digital. *See* Ex. 1.

13 In his report, Prof. Hesselink described a typical engineering design process, which was
 14 developed by the Stanford Design School, the leading proponent of well-organized design and
 15 product development processes, and which he personally used at Senvid, Western Digital and
 16 other companies. Ex. 2 (8/24/2017 Hesselink Report (“Op. Rep.”)) ¶ 35. That design process is a
 17 multi-step, complex effort, requiring engagement, evaluation, and back-and-forth discussion
 18 producing potential solutions and multiple prototypes that are then tested. *Id.* ¶¶ 34-43.

19 Prof. Hesselink further surveyed Waymo’s own R&D process specific to self-driving cars,
 20 including the amount of work and number of approaches that were required in the development of
 21 Waymo’s LiDAR sensor. For instance, Prof. Hesselink noted that “[a]s with any optical system
 22 design, even knowing the desired specifications for the LiDAR, much work remains to be done,
 23 and design approaches that initially appear promising often prove not to work. This was true of
 24 Waymo’s development of PBr. Specifically, Mr. Droz’s team devoted a year of work into
 25 different possibilities, beginning with [REDACTED]
 26 [REDACTED], and trying [REDACTED].” *Id.* ¶ 49.

27 Using his design process experience, including in the design of technology employing
 28 numerous trade secrets, as well as his expertise in optical engineering and software products and

1 his review of Waymo's R&D process of the LiDAR sensor, *id.* ¶¶ 44-59, Prof. Hesselink properly
 2 offered opinions on the "head start" Uber would get from misappropriating Trade Secrets 25, 90
 3 and 111 and commented on the amount of time Defendants contended it would take to "redesign"
 4 around the other elected trade secrets. *Id.* ¶¶ 62-63.

5 In addition, Prof. Hesselink testified at length regarding his understanding of autonomous
 6 vehicle design cycles and Uber's ability to independently develop autonomous vehicle technology
 7 similar to Waymo's. *See, e.g.*, Ex. 3 (9/26/2017 Hesselink Tr.) at 177:10-180:10 (describing
 8 necessity to drive vehicles millions of miles in order to properly develop algorithms required for
 9 autonomous driving); Ex. 4 (11/10/2017 Hesselink Tr.) at 325:16-329:6 (describing length of
 10 process for designing LiDAR system for autonomous vehicle). Prof. Hesselink's opinion on saved
 11 development time should not be excluded on the basis of his qualifications.¹

12 **III. PROF. HESSELINK'S OPINIONS ARE THE PRODUCT OF RELIABLE**
 13 **METHODOLOGY**

14 Far from emerging from a "black box" (MIL at 2), Prof. Hesselink's opinions are the
 15 product of detailed analysis that is laid out in his expert reports. As described in Part II, Prof.
 16 Hesselink detailed the design process and provided an overview of Waymo's development history
 17 creating the asserted trade secrets. Prof. Hesselink then offers two different opinions.

18 First, for Trade Secrets 25, 90 and 111, Prof. Hesselink offers an estimated "head start"
 19 that Defendants would receive by misappropriating the trade secret. Dkt. 2201-4 at ¶ 62. With
 20 respect to the fiber laser technology, Prof. Hesselink based this opinion on his optical engineering
 21 and LiDAR expertise, his knowledge of and experience with the relevant design process, his
 22 analysis of Waymo's own AV development timeline, and the development time incurred by
 23 Levandowski's shell company, Tyto LiDAR. *Id.* ¶¶ 457, 458. With respect to Trade Secret 25,
 24 Prof. Hesselink reviewed the relevant sensing parameters and use cases, discussed their
 25 relationship to overall LiDAR design based on his experience with LiDAR and with the relevant
 26 design process, and drew on facts related to Waymo's own design process. *Id.* ¶ 455. And with

27
 28 ¹ Defendants' attempt to characterize Prof. Hesselink as an advocate is similarly misplaced—as Defendants are well aware. *See* Ex. 4 at 307:20-309:22.

1 respect to Trade Secret 111, Prof. Hesselink noted his opinion, based on his experience in the
 2 optical engineering industry, that “there is no settled approach to the design of medium-/long-
 3 range LiDAR sensor design” and explained how a company independently developing LiDAR
 4 technology would need to devote time to [REDACTED]
 5 [REDACTED], referring both to Waymo’s own R&D effort and Defendants’ own development timeline
 6 for a mid-range LIDAR device. *Id.* ¶¶ 52, 125, 147-152.

7 Second, Prof. Hesselink offered opinions concerning Defendants’ alleged “design arounds”
 8 for Trade Secrets 2, 7, 9, 13, and 14. Prof. Hesselink opines that these times do not reflect the
 9 time necessary to independently develop the trade secrets, because, as Defendants’ own witness
 10 admits, they are based on an assumption that the redesign would be a “straight path design” from
 11 the misappropriated design—without any trial and error at all. *Id.* ¶ 463. Prof. Hesselink draws
 12 on his own LiDAR expertise, experience with the relevant design process, and evidence related to
 13 Waymo’s and Uber’s development to explain how such redesign times would underestimate the
 14 time necessary to independently develop the asserted trade secrets from scratch. *Id.* ¶ 463.

15 In his Reply Report, Prof. Hesselink then responded to **Defendants’ experts’ opinions** that
 16 merely parroted Defendants’ interrogatory responses on redesign time. Prof. Hesselink correctly
 17 pointed out that: “a LiDAR device is a closely coupled engineering device. Design decisions
 18 made throughout the system for one element of the system are impacted by design decisions
 19 elsewhere. Benefits obtained from use of Trade Secret features affect other aspects of the system,
 20 and have carry-on effects throughout the entire design.” Ex. 5 (Rep. Rep.) ¶ 279. He further
 21 pointed out that Defendants’ experts’ opinion “fails to account for the possibility that even if the
 22 manpower was available to accomplish the necessary work in parallel, certain design aspects rely
 23 on the completion of one task before the other can be started.” *Id.* ¶ 281. Finally, Prof. Hesselink
 24 explains how changes in the LiDAR design will affect the overall development timeline. *Id.* ¶¶
 25 282-283. These opinions are appropriately grounded in Prof. Hesselink’s experience with LiDAR
 26 and the relevant design process along with his review of the evidence in this case.

27 Defendants’ reliance on this Court’s exclusion of Mr. Wagner’s saved development time
 28 testimony is misplaced. Dkt. 2202. Defendants ignore the ten pages in Prof. Hesselink’s Opening

1 Report that discuss the trial-and-error process in optical system design and development, which he
 2 also teaches at Stanford, on which he based his opinion saved development time opinions. *See* Ex.
 3 2 (Op. Rep.) ¶ 34-59. This trial-and-error methodology is of a type regularly used by engineering
 4 experts. *See, e.g., Johnson v. Simonton Bldg. Prods.*, No. 08-2198-CM-DJW, 2011 U.S. Dist.
 5 LEXIS 7671, at *41 (D. Kan. Jan. 26, 2011) (summarizing expert's opinion that trial and error
 6 process is routine in mechanical engineering design). Furthermore, Prof. Hesselink's opinion that
 7 an overly quick development time reflects the time saved from misappropriation of trade secrets is
 8 similarly proper. *Ajaxo Inc. v. E*Trade Grp. Inc.*, 135 Cal. App. 4th 21, 68 (Cal. Ct. App. 2005)
 9 (remanding for new trial on damages where substantial evidence existed from which jury could
 10 have concluded that third party to whom defendant disclosed trade secret could not have
 11 independently developed the technology at issue in the relevant time frame).

12 **IV. DEFENDANTS MISCHARACTERIZE PROF. HESSELINK'S OPINIONS**

13 Defendants argue that Prof. Hesselink's opinions would lead to the result that, on three
 14 trade secrets alone, Uber saved over five years of development time in its overall AV timeline.
 15 But Prof. Hesselink never offered such an opinion. Defendants conflate the two different sets of
 16 opinions that Prof. Hesselink offered, as described above. Prof. Hesselink explains that certain
 17 design aspects cannot be completed in parallel, because one needs to be completed before the
 18 other is started. Ex. 5 (Rep. Rep.) ¶ 281. He further explains *why* LiDAR redesigns will impact
 19 the overall self-driving car solution and provides specific examples. *See id.* ¶ 279, 283. Prof.
 20 Hesselink does not state, as Defendants contend, that the calculation for saved development time
 21 for each trade secret must start only after the conclusion of the saved development time for another
 22 trade secret. To the contrary, Prof. Hesselink tethers his saved development time opinions to each
 23 particular trade secret. Tellingly, Defendants never cite to where Prof. Hesselink describes this
 24 purported bottleneck approach, because the only applicable paragraph, *id.* ¶ 282, is actually a
 25 response to Defendants' experts' proposed re-design times.

26 **V. DEFENDANTS' OWN EXPERT REPORTS SHOW PROF. HESSELINK'S**
 27 **OPINIONS ARE PROPER**

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1 Defendants fail to acknowledge that their own technical experts provide diametrically
 2 opposite opinions based on even less evidence—ignoring even the obviously relevant evidence in
 3 this case (Waymo’s own R&D timeline, Uber’s analyses, etc.). For example, Defendants fault
 4 Prof. Hesselink for not conducting any “design cycle analysis.” MIL 2. Yet, Defendants’ own
 5 expert Dr. Lebby, bereft of any self driving car experience,² offers no analysis of the Uber design
 6 cycle in support of his opinion that “[t]he time necessary for Uber to complete its proposed
 7 redesigns is not cumulative.” Ex. 7 (Lebby Op. Rep.) ¶ 378. Similarly, Defendants’ expert Dr.
 8 McManamon opines, for example, that Uber’s use of Trade Secret 111 would save no more than
 9 “an hour or two of engineering time” without supporting evidence. Ex. 8 (McManamon Op. Rep.)
 10 ¶ 160. By contrast, Prof. Hesselink did consider Waymo’s R&D time frame and other documents
 11 and testimony from both sides of the case. Dkt. 2201-4 (Op. Rep.) ¶¶ 455-457, 458.

12 **VI. DEFENDANTS’ ARGUMENTS DIRECTED TO PROF. HESSELINK’S OPINIONS**
INVOLVE FACTUAL ISSUES THAT SHOULD BE DECIDED BY THE JURY

13 Faced with competing expert opinions, it is for the jury to determine which opinion to credit.
 14 Defendants’ *Daubert* motion is premised on disagreements between Prof. Hesselink and
 15 Defendants’ experts regarding issues that are based in fact and are therefore should be decided by
 16 the jury, not by this Court at the *Daubert* stage. *See Brocade Communs. Sys. V. A10 Networks, Inc.*,
 17 No. C 10-3428 PSG, 2012 U.S. Dist. LEXIS 97907, at *8 (N.D. Cal. July 13, 2012) (denying motion
 18 *in limine* where plaintiff did not agree with expert’s methods or sufficiency of data because those
 19 challengers “go to the weight of the evidence and not to their admissibility”). When an expert’s
 20 opinions are based on a reliable foundation, as is the case with Prof. Hesselink’s opinions here, the
 21 expert may testify and the jury decides how much weight to give that testimony. *Primiano v. Cook*,
 22 598 F.3d 558, 565 (9th Cir. 2010).

23 **VII. CONCLUSION**

24 For all of the foregoing reasons, Waymo respectfully requests that the Court deny
 25 Defendants’ motion to exclude Prof. Hesselink’s saved development time opinions.
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28 ² See Ex. 6 (CV of Defendants’ Expert, Michael Lebby).

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